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GB 1229450 A

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(54) ATTACHMENT DEVICE

(57) The attachment device comprises a headed stud 10 and a plate-like clip 12. The clip has a slot 17 comprising a first portion 17a through which the head of the stud will pass, a second portion 17b through which the head of the stud will not pass and a third portion 17c joining the first and second portions. The third portion 17c over at least part of its length has a width which is less than the cross sectional dimension of the shaft 15 of the stud 10 and the clip has a weakened zone 18 adjacent to at least one side of the third slot portion so that the clip can deform to allow the shaft of the stud to pass along the third slot portion between the first and second slot portions.

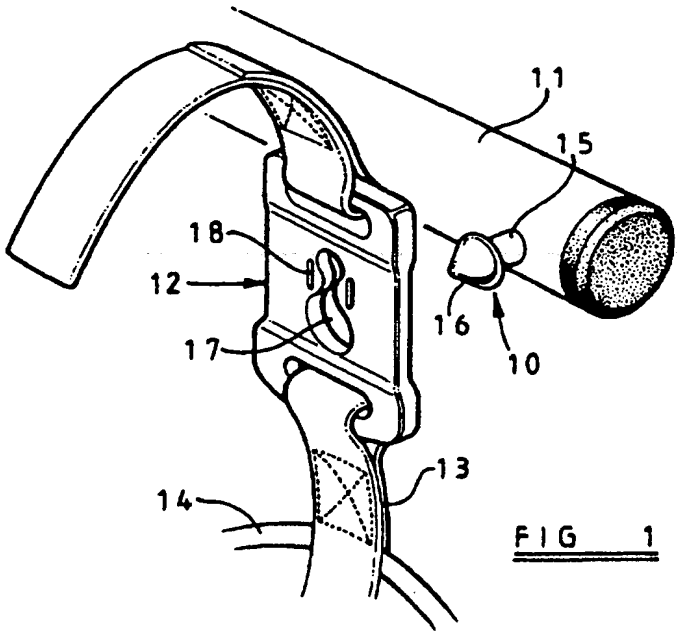

FIG 1

GB 2 293 857 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

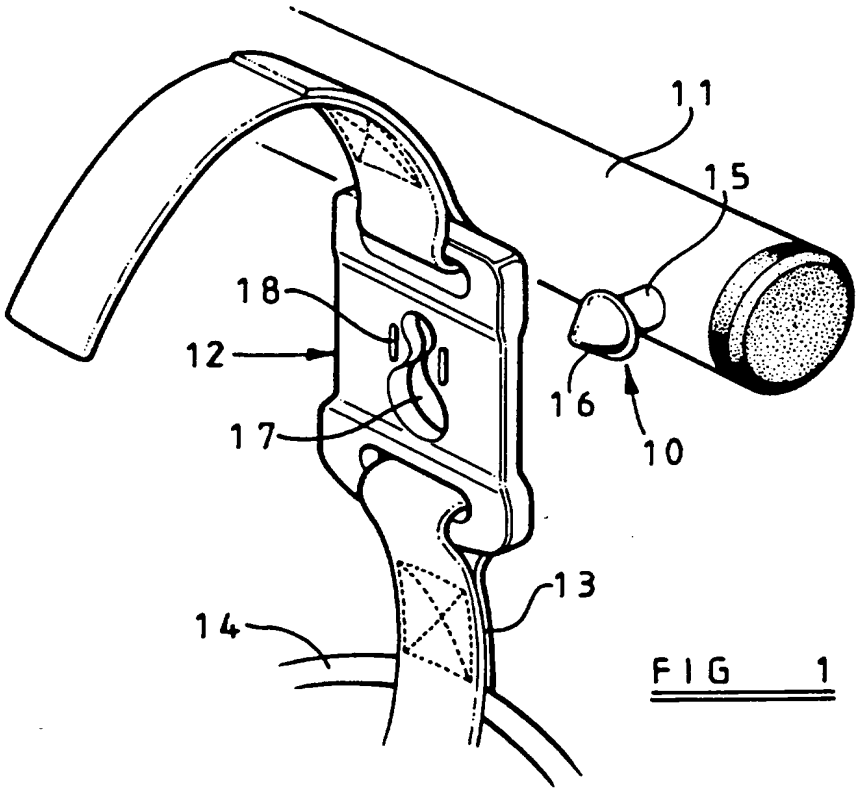

FIG 1

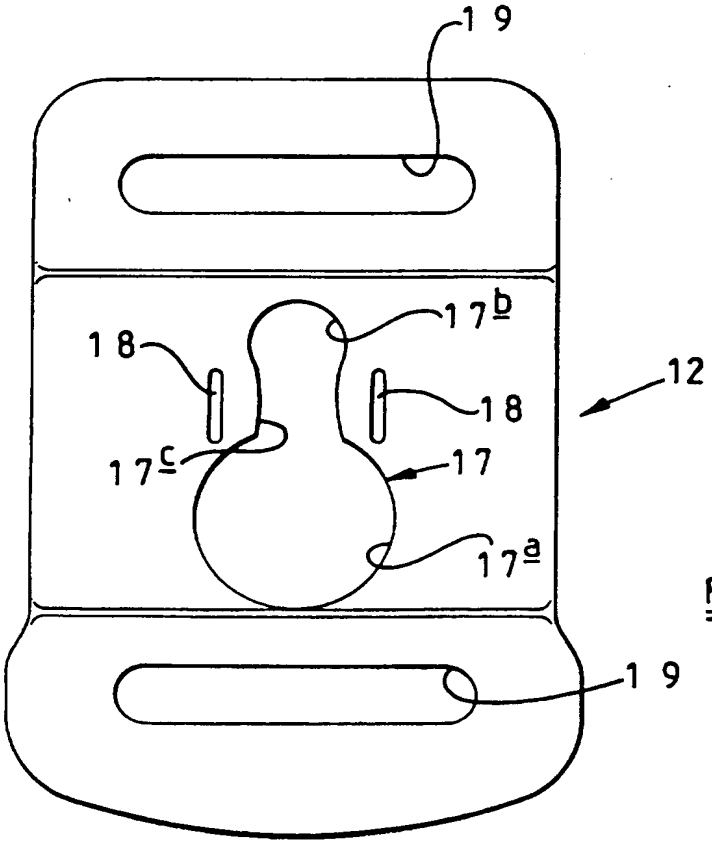

FIG 2

ATTACHMENT DEVICE

This invention relates to an attachment device for attaching a sling to a hoist, particularly but not necessarily exclusively an invalid hoist.

It is known to provide an attachment device comprising a headed stud, which is secured to the lifting arm of a hoist, and a plate-like clip, which is connected to a sling. The clip is provided with a slot comprising a first portion through which the head of the stud will pass, a second portion through which the head of the stud will not pass and a passage joining the first portion to the second portion. In order to place the clip on the stud, the first portion of the slot is aligned with the head of the stud. The clip is then placed over the stud and moved relative to the stud until the shaft of the stud is disposed in the second portion of the slot. The second portion of the slot receives the shaft of the stud with a clearance so that the clip can pivot about the shaft. The passage receives the shaft of the stud as a friction fit to discourage unintentional movement of the clip from an operative position in which the shaft of the stud is disposed in the second slot portion to a disengageable position in which the shaft of the stud is disposed in the first slot portion.

However, it has been found that these known clips do occasionally become unintentionally disengaged from the studs and the present invention seeks to provide an improved attachment device which will make unintentional disengagement less likely.

According to the present invention, there is provided an attachment device for attaching a sling to a hoist, the attachment device comprising a headed stud and a plate-like clip, the clip having a slot comprising a first portion through which the head of the stud will pass, a second portion though which the head of the stud will not pass and a third portion joining the first and second portions, the third portion over at least part of its length having a width which is less than the cross-sectional dimension of the shaft of the stud and the clip having a weakened zone adjacent to at least one side of the third slot portion so that the clip can deform to allow the shaft of the stud to pass along the third slot portion between the first and second slot portions.

Preferably, the clip has two weakened zones adjacent to opposite sides, respectively, of the third slot portion.

In a preferred form, the or each weakened zone is formed by a further slot in the clip, but the or each weakened zone could be provided by making the clip thinner in this zone.

Preferably, the shaft of the stud is of circular cross-section.

The invention will now be more particularly described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of one embodiment of an attachment device

according to the invention; and

Figure 2 is a plan view of the clip shown in Figure 1 on an enlarged scale.

Referring to the drawings, the attachment device shown therein comprises a stud 10 secured to a lifting arm 11 of an invalid hoist, e.g. a hoist according to GB 2184706B, and a clip 12 connected by a flexible strap 13 to a sling 14.

The stud 10 has a shaft 15 of circular cross-section and a round head 16.

The clip 12 is plate-like and of generally rectangular shape. It is made of plastics material, typically glass fibre reinforced nylon. The clip 12 has a slot 17 comprising a first part circular end portion 17a, a second part circular end portion 17b spaced from the portion 17a, and a neck portion 17c joining the portions 17a and 17b.

The diameter of the slot portion 17a is slightly larger than the diameter of the head 16 of the stud 10. The diameter of the slot portion 17b is less than the diameter of the head 16 of the stud 10 and slightly larger than the diameter of the shaft 15 of the stud 10 so that when the shaft 15 is disposed in the slot portion 17b the clip 12 can pivot freely about the stud 10 but cannot disengage therefrom. The slot portion 17c has over at least part of its length a width which is slightly less than the diameter of the shaft 15. Typically, the shaft 16 has a diameter of 7.15mm and the minimum width of the slot portion 17c is 6.02mm. Thus, it will be appreciated

that in order for the shaft 16 to pass from the slot portion 17a to the slot portion 17b, the walls of the slot portion 17c must deform outwardly.

The clip 12 is generally rigid but has two weakened zones defined by narrow elongate slots 18 which extend parallel and adjacent to opposite sides of the neck portion 17c. These elongate slots 18 allow the clip 12 to deform as the shaft 16 passes from one end to the other of the slot 17.

Transverse slots 19 are provided so that the clip 12 can be attached to the strap 13.

In order to place the clip on the stud, the part circular slot portion 17a is aligned with the head 16 of the stud 10. The clip 12 is then placed over the stud 10. A force is then applied to the clip 12 to cause the clip to slide relative to the stud 10 until the shaft 15 of the stud is disposed in the part circular slot portion 17b. During this sliding movement, the stud outwardly deforms the walls of the slot portion 17c. The walls of the slot portion 17c must also be outwardly deformed to allow the stud to return to a disengageable position in which the shaft 15 of the stud is disposed in the slot portion 17a. This clip is, therefore, less likely to become unintentionally disengaged from the stud than hitherto known clips. Also, the clip moves into an operative position (in which the shaft 15 is disposed in the slot portion 17b) with a resounding click. This gives both attendant and user a sense of greater security.

The embodiment described above is given by way of example only and

various modifications will be apparent to persons skilled in the art without departing from the scope of the invention. For example, there may be only one weakened zone and the or each weakened zone could be provided by making the clip thinner in this/these zone(s) instead of providing elongate slots. Also, the slot portion 17c need not be rectilinear. It could be of any other appropriate shape.

CLAIMS

1. An attachment device for attaching a sling to a hoist, the attachment device comprising a headed stud and a plate-like clip, the clip having a slot comprising a first portion through which the head of the stud will pass, a second portion through which the head of the stud will not pass and a third portion joining the first and second portions, the third portion over at least part of its length having a width which is less than the cross-sectional dimension of the shaft of the stud and the clip having a weakened zone adjacent to at least one side of the third slot portion so that the clip can deform to allow the shaft of the stud to pass along the third slot portion between the first and second slot portions.

2. An attachment device as claimed in claim 1, wherein the clip has two weakened zones adjacent to opposite sides, respectively, of the third slot portion.

3. An attachment device as claimed in claim 1 or claim 2, wherein the or each weakened zone is formed by a further slot in the clip.

4. An attachment device as claimed in claim 1 or claim 2, wherein the or each weakened zone is provided by making the clip thinner in this zone.

5. An attachment device as claimed in any one of the preceding claims, wherein the shaft of the stud is of circular cross section.

6. An attachment device substantially as hereinbefore described with reference to the accompanying drawings.

7. A hoist having a sling and an attachment device according to any one of the preceding claims for attaching the sling to the hoist.

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Patents Act 1977
Examiner's report to the Comptroller under Section 17
(Search report)

Application number
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Relevant Technical Fields

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(ii) Int Cl (Ed.6) F16B 21/09

Search Examiner
A ANGELE

Date of completion of Search
13 SEPTEMBER 1995

Databases (see below)
(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE WPI

Documents considered relevant following a search in respect of Claims :-
ALL

Categories of documents

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Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1229450 A (WARREN FASTENER) see whole document	1 to 3 and 5

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